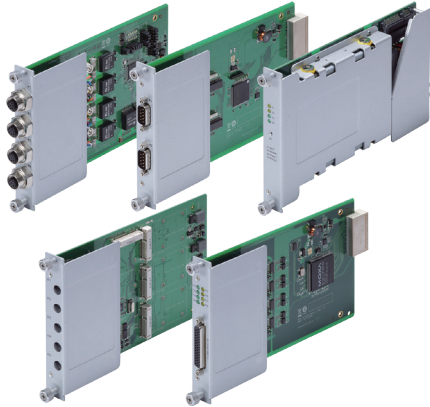


# TC-6000 Series Expansion Modules

## Peripheral modules for the TC-6000 series



- > TC-SP04-DB44-T: 4-port software-selectable RS- 232/422/485 over DB44-F serial module
- > TC-CP02-DB-T: 2-port optically isolated CAN module
- > TC-DK10-T/TC-DK20-T: 4-socket mini PCIe card carrier module
- > TC-SW04-M12-4P-T: 4-port megabit Ethernet switch port module with M12 connector
- > TC-SW04-M12-8P-T: 4-port gigabit Ethernet switch port module with M12 connector



### Introduction

TC-6000 series expansion modules provide peripheral interfaces for the TC-6000 series line of railway computers.

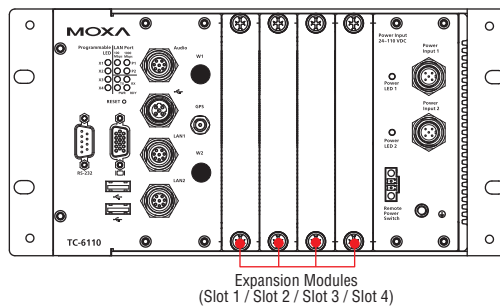
These modules include a 4-port (without PoE) gigabit or megabit Ethernet switch module with M12 connectors, a mini PCIe card carrier module with four sockets, a serial module supporting four software-selectable RS-232/422/485 interfaces over a single DB44-F connector (cable adapter), and an optically isolated CAN module with two ports.

The modules let system integrators and administrators easily add additional Ethernet ports and/or bandwidth, as well as serial, PCIe, and CAN interfaces to the TC-6000 series of train computers.

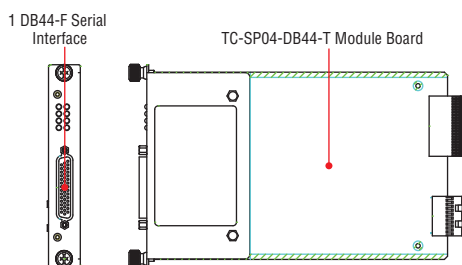
All of the TC-6000 modules are compliant with the mandatory sections of the EN 50155 Class TX standard, maintaining the TC-6000 series goal of offering a highly dependable computing platform suitable for a wide variety of on-board railway applications.

### Appearance

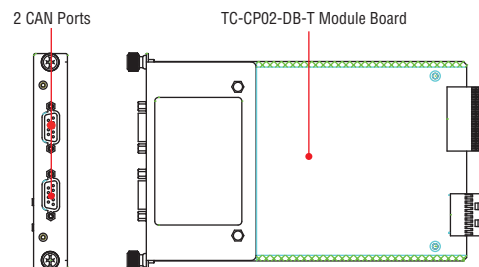
#### TC-6110 Expansion Slot Location



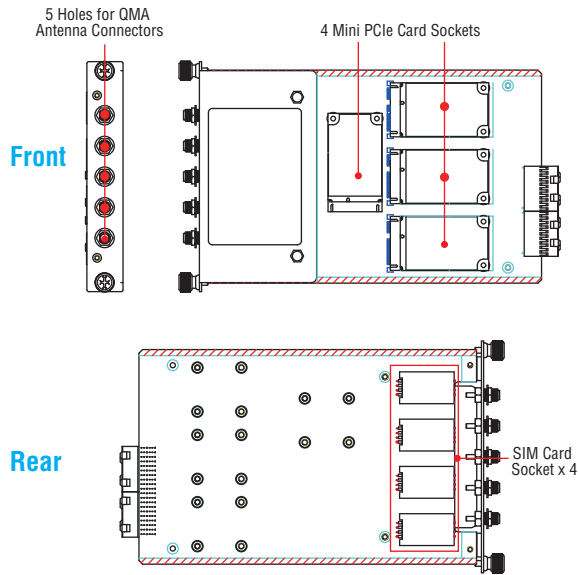
#### TC-SP04-DB44-T



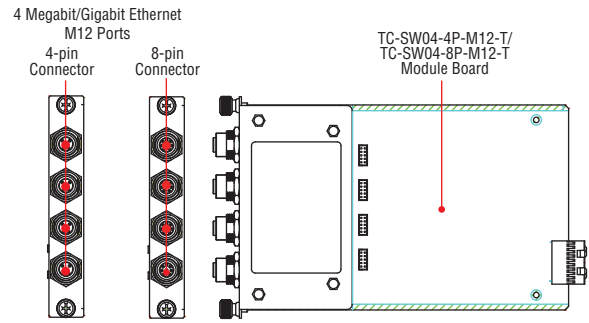
#### TC-CP02-DB-T



### TC-DK10-T/TC-DK20-T



### TC-SW04-M12-4P-T/TC-SW04-M12-8P-T



## TC-SP04-DB44-T Serial Module

### Serial Port Interface

#### Serial Standards:

RS-232/422/485, software-selectable

#### Connector Type:

1 DB44 connector serving all 4 interfaces; special cable required

### Serial Communication Parameters

**Data Bits:** 5, 6, 7, 8

**Stop Bits:** 1, 1.5, 2

**Parity:** None, Even, Odd, Space, Mark

**Flow Control:** RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485

**Baudrate:** 50 bps to 921.6 Kbps (non-standard baudrates supported; see user's manual for details)

### Physical Characteristics

**Dimensions:** 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

**Weight:** 234 g (0.52 lb)

### Environmental Limits

**Operating Temperature:** -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

## TC-CP02-DB-T CAN Module

### CAN Interface

**Interface:** 2 optically isolated CAN 2.0 A/B ports

**Signal:** CAN\_H, CAN\_L

**Isolation:** 2 kV

**Speed:** 1 Mbps

**Connector Type:** DB9 male

### Physical Characteristics

**Dimensions:** 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

**Weight:** 227 g (0.50 lb)

### Environmental Limits

**Operating Temperature:** -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

## TC-DK10-T/TC-DK20-T mini PCIe Carrier Module

### Mini PCIe Card

**Interface:** 4 sockets, total

• Socket 1 on both TC-DK10-T and TC-DK20-T: USB 2.0 / PCIe V1.0

• Sockets 2, 3, and 4 on the TC-DK10-T: USB 2.0

• Sockets 2, 3, and 4 on the TC-DK20-T: USB 2.0 / PCIe V1.0

**SIM Card Socket:** 4 sockets reserved for cellular applications

**Wireless Antenna Hole:** 5 reserved for QMA antenna connectors

### Physical Characteristics

**Dimensions:** 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

**Weight:** 220 g (0.49 lb)

### Environmental Limits

**Operating Temperature:** -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

Model	TC-DK10-T				TC-DK20-T			
Interface	Socket 1	Socket 2	Socket 3	Socket 4	Socket 1	Socket 2	Socket 3	Socket 4
PCIe V1.0 (one lane)	✓	-	-	-	✓	✓	✓	✓
USB .20	✓	✓	✓	✓	✓	✓	✓	✓

## TC-SW04-M12-4P-T/TC-SW04-M12-8P-T Switch Module

### Ethernet Interface

#### Standard:

4 Ethernet M12 switch ports: auto-sensing 10/100 Mbps (TC-SW04-M12-4P-T) or 10/100/1000 Mbps (TC-SW04-M12-8P-T)

**Protection:** 1.5 kV magnetic isolation protection

**Connector Type:** 4-pin M12 D-coded/8-pin M12 A-coded

### Physical Characteristics

**Dimensions:** 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

**Weight:** 278 g (0.62 lb)

### Environmental Limits

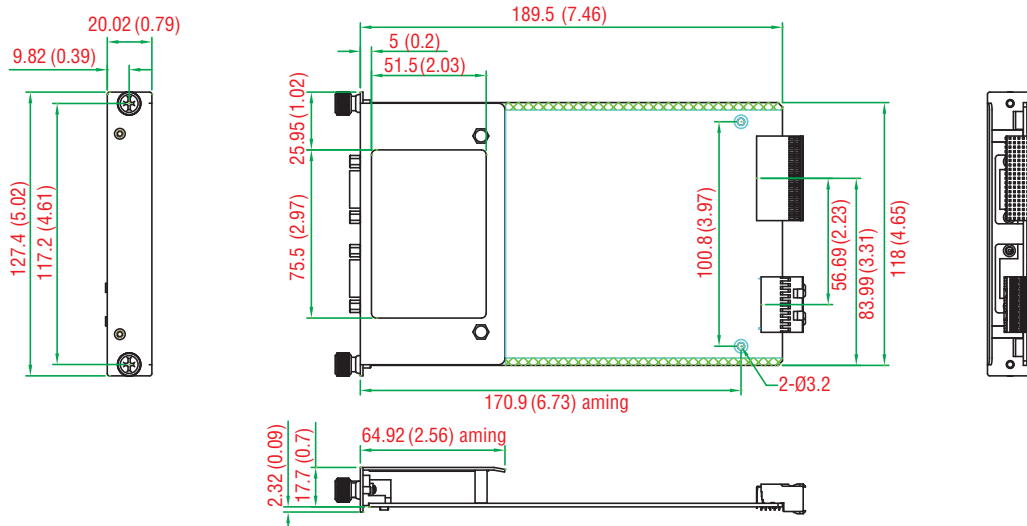
**Operating Temperature:** -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

### Dimensions

Unit: mm (inch)



## Ordering Information

### Available Models

**TC-SP04-DB44-T:** 4 RS-232/422/485 serial interfaces over a single DB44 connector; cable sold separately, -40 to 70°C operating temperature (EN 50155 Class TX)

**TC-CP02-DB-T:** 2 optically isolated CAN interfaces with DB9 connectors, -40 to 70°C operating temperature (EN 50155 Class TX)

**TC-DK10-T:** 4 PCIe mini card slots with PCIe and USB interfaces on slot 1 and USB interfaces on Slot 2, 3 and 4, 4 SIM card sockets, -40 to 70°C operating temperature (EN 50155 Class TX)

**TC-DK20-T:** 4 PCIe mini card slots with PCIe and USB interfaces, 4 SIM card sockets, -40 to 70°C operating temperature (EN 50155 Class TX)

**TC-SW04-M12-4P-T:** 4-port megabit Ethernet switch with M12 D-coded connectors, -40 to 70°C operating temperature (EN 50155 Class TX)

**TC-SW04-M12-8P-T:** 4-port gigabit Ethernet switch with M12 A-coded connectors, -40 to 70°C operating temperature (EN 50155 Class TX)

### Package Checklist

- TC-6000 series expansion module